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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,621	10/17/2005	Kenneth H Sinclair	ObjectDetect2	6082
28731	7590	05/11/2007	EXAMINER	
LEE WEINSTEIN			ALSOMIRI, ISAM A	
32A FAIRMONT STREET			ART UNIT	PAPER NUMBER
ARLINGTON, MA 02474			3662	
			MAIL DATE	DELIVERY MODE
			05/11/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/553,621

Applicant(s)

SINCLAIR ET AL.

Examiner

Isam Alsomiri

Art Unit

3662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

New formal drawings in compliance with 37 CFR 1.121(d) are required in this application. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The FORMAL drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 4, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Asayama US005386285A.** Referring to claims 1 and 6, Asayama discloses in figure 1 an object detection system, comprising: A structured light source (15) capable of projecting a first pattern of structured light from a small aperture, said first pattern of structured light falling within a thin planar volume of space: A first electronic imager (4) not co-planar with said first pattern of structured light, said imager arranged in a pre-determined spatial relationship to said aperture, and said imager imaging a region of space (R) in which objects (5) could intersect said first projected pattern of structured light; Means for storing (9) at least one electronic images; and Means calculating object

positions from the positions in which structured light appears in a plurality of images (see Abstract, col. 1 lines 60-68).

Referring to claim 4, Asayama teaches indicating an alarm condition (14) if objects enter a volume of space where objects should not be allowed.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

#### **Claim 5 rejected under 35 U.S.C. 103(a) as being unpatentable over**

**Asayama US005386285A.** Asayama is silent about taking automated corrective action if objects enter a volume of space where objects should not be allowed. However, having an automated corrective action would have been very well known and obvious to include, such as braking or steering away from possible collisions.

**Claims 2-3, 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asayama US005386285A in view of Goncalves et al US 20040167670A1.**

Referring to claims 2 and 11, Asayama does not teach combining dead-reckoning data with object position data from a plurality of electronic images captured from a plurality of positions of said electronic imager, to produce a three-dimensional representation of objects within a volume of interest. Goncalves teaches combining

visual sensor and dead reckoning sensors to obtain precise location and orientation of the object in the field of view (see Abstract); further, uses multiple images from different location to produce a three-dimensional representation of the object within the volume of interest (see [0075]). It would have been obvious to modify Asayama to include the dead reckoning and the multiple images from different location to create 3-D images of objects, which helps in recognition; and the dead reckoning improves detection of position and orientation/direction of the detected objects.

Referring to claim 3, Asayama teaches means for storing (9) object image; however, Asayama does not teach means for storing a map information about positions of detected objects. Goncalves teaches means for storing map information about positions of detected object (see Abstract). It would have been obvious to modify Asayama to include the map information storing means to keep a record of it or for later purposes.

Referring to claim 8, Asayama does not teach capturing a plurality of images, through a plurality of spatially substantially non-coincident electronic imagers. Goncalves teaches capturing a plurality of images through a plurality of non-coincident electronic imagers (see [0072]). It would have been obvious to modify Asayama to include the multiples imagers to capture different angles of the object to create a 3-D image of the object.

Referring to claims 7 and 9, Asayama does not teach capturing a plurality of images through said first electronic imager, and wherein said step of digitally processing at least one captured image comprises processing a plurality of captured images in

such a way as to improve signal to noise ratio, and spatial resolution. Goncalves teaches capturing a plurality of images and processing the images (see [0075]). It would have been obvious to modify Asayama to include the multiple pictures to create the 3-D view or image of the object.

Referring to claims 10 and 12, the combination of Asayama and Goncalves (as mentioned above) teaches capturing a plurality of images through said first electronic imager, and varying the plane of said structured light pattern between capturing at least two of said plurality of images such that images are captured of objects intersecting a plurality of thin planer structured light patterns (this step is inherent since the no two positions of the device have the same field of view "plane"), and said step of digitally processing at least one captured image comprises processing a said plurality of images captured of intersections of objects with said plurality of varied-plane structured light patterns, to derive a three-dimensional representation of the intersection of objects with said plurality of planar structured light patterns (see Goncalves paragraph 0075).

Further, as mentioned above the combination of Asayama and Goncalves teaches combining dead-reckoning data with redundantly derived object position data from a plurality of electronic images captured from a plurality of positions of said electronic imager imaging intersections of objects with a plurality of planar structured light patterns, to produce a three-dimensional representation of objects within a volume of interest which has less position-dependent position error than a three-dimensional representation derived from a single position of said electronic imager (inherent, since the object viewed from multiple positions, more accurate positional data are obtained).

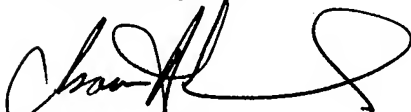
***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isam Alsomiri whose telephone number is 571-272-6970. The examiner can normally be reached on Monday-Friday 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Isam Alsomiri

A handwritten signature in black ink, appearing to read 'Isam Alsomiri', written over a horizontal line.

May 7, 2007